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THE DRIED FIG INDUSTRY OF PORTUGAL

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FOREWORD

Portugal, in recent years, has become an important shipper of dried figs and particularly fig paste to the United States. These have been keenly competitive with much of the California production. Because of the recency of this development and the paucity of Portuguese statistics, little reliable information has been available to the United States industry on the basic situation and outlook for the production and export of Portuguese dried figs and paste. This survey was undertaken to develop information which would be of assistance to the industry in evaluating current conditions and appraising the future competition of these products in the United States.

DM Rubel

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Agriculture-Washington

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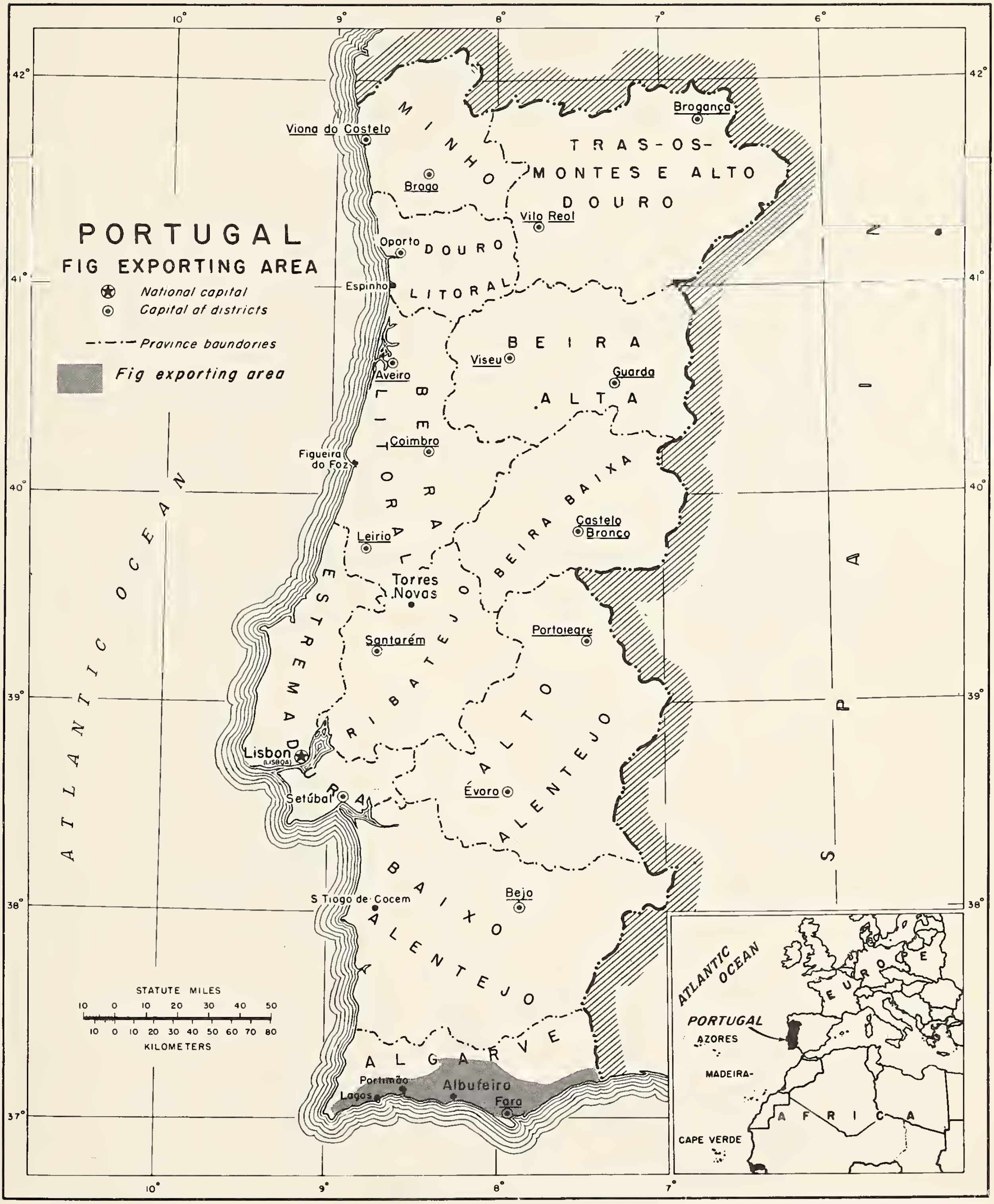

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DRIED FIG INDUSTRY OF PORTUGAL

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INTRODUCTION

The importance of Portuguese dried figs in the United States market has varied greatly over the years. In the late twenties when the United States still depended largely on imports for its dried figs, Portugal supplied 13 percent of those entering this country. As California production expanded, United States imports from all sources fell sharply--from 17,212 short tons in the 1925-29 period to 4,013 tons in 1930-34. The proportion supplied by Portugal declined even more sharply, to only 3.3 percent.

Portugal resumed shipments of dried figs in volume to the United States in 1950. For the crop years 1950-54, Portuguese figs accounted for 10.7 percent of United States imports of all forms of dried figs. In the 1955 crop year, they made up 50.6 percent--amounting to 3,718 tons of total United States imports of 7,341 tons. The volume shipped by Portugal in subsequent seasons has been well below the 1955 level, but substantially larger than in any crop year since the twenties. Because of price considerations Portuguese figs have competed successfully with domestic and other foreign dried figs for a large share of the United States market.

TABLE 1.--U. S. imports of dried figs,[1] averages 1925-54, annual 1955 and 1956

Year beginning September 1	Total imports	Imports from Portugal	Percent of total from Portugal
	Short tons	*Short tons*	*Short tons*
1925-29	17,212	2,242	13.0
1930-34	4,013	132	3.3
1935-39	2,802	32	1.1
1940-44	175	21	12.0
1945-49	1,770	15	0.8
1950-54	5,538	592	10.7
1955	7,341	3,718	50.6
1956	7,745	2,171	28.0

[1] Includes fig paste, which was not significant prior to 1951, and prepared or preserved figs. Does not include fresh figs or figs in brine.

PRODUCTION[1]

Portuguese dried fig production is centered in three areas: The Douro region of northwest Portugal, the area about Torres Novas--northeast of Lisbon, and Algarve--the southern coastal Province.

Only 3 percent of the production is in the Douro region; the rest is about equally divided between the Torres Novas and Algarve areas. However, nearly all of the figs grown in the Torres Novas are of an inedible variety which can be used only for the distillation of alcohol.

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[1] All production figures are estimates. The Portuguese Government does not compile acreage or production statistics for figs. The estimates presented in this study were developed by the U. S. agricultural attaché's office, based on information furnished by the Portuguese trade and agricultural officials.

The Algarve pack, on the other hand, is of an edible variety, about two-thirds of which grades out merchantable and one-third substandard, i.e. industrial. The latter are culls--fruit which is too small, bruised, sour, insect infested, dirty, or otherwise defective.

Virtually all of Portugal's dried fig exports--both for edible and manufacturing purposes--are from Algarve. Thus, this study concerns itself primarily with Algarve's production.

Algarve production averaged 13,600 tons in the 10 years, 1947 through 1956. Of this quantity, 9,000 tons qualified as edible and 4,600 tons as industrial. Torres Novas production in the same period averaged 13,200 tons, almost entirely for industrial use. Production from the Douro district, all edible, accounted for the remaining 900 tons of Portugal's average annual production of 27,700 tons.

Algarve production has declined somewhat in recent years. The average crop in the 1952-56 period was 8 percent less than the 1947-51 average.

This decline is consistent with indications of decreasing tree numbers. (The Junta Nacional das Frutas (National Fruit Board) estimates there are 2.6 million fig trees in Algarve.) In their observations in the Algarve producing districts the authors saw many old fig trees and very few newly planted ones. They noticed that where old trees had died or had been pulled out, replacement is often made with almond, carob, or olive trees and, if irrigation water becomes available, with citrus. These are regarded as more profitable than figs. Also since the branches of old Algarve fig trees tend to spread out and to droop, the ground under the branches is not accessible for planting wheat, horsebeans, or truck crops; such inter-cropping is of considerable importance to the Portuguese peasant. With increasing mechanization of wheat production, the scattered fig trees are also an obstacle to tractor cultivation. Representatives of the trade, too, are of the opinion that figs are being displaced to some extent by other tree crops. There is little doubt that almonds and citrus are being expanded substantially in Algarve.

Varieties

The Portuguese fig industry is able to distinguish about 12 varieties. Native varieties, which do not require caprification, predominate. One type known as Cotio is said to account for 90 percent of the production in the Algarve Province. Though this type produces fruit without

TABLE 2.--Production of dried figs, by region, edible and inedible, annual 1947-57 and averages 1947-56, 1947-51, and 1952-56

Year	Algarve			Douro	Torres Novas			Total		
	Edible	Industrial	Total	Edible	Edible	Industrial	Total	Edible	Industrial	Total
	Short tons	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*
Annual:										
1947	9,900	5,900	15,800	1,100	400	8,500	8,900	11,400	14,400	25,800
1948	7,200	5,200	12,400	800	500	10,300	10,800	8,500	15,500	24,000
1949	7,700	3,300	11,000	800	400	11,100	11,500	8,900	14,400	23,300
1950	14,300	1,900	16,200	1,100	1,500	14,300	15,800	16,900	16,200	33,100
1951	9,900	5,000	14,900	900	900	11,000	11,900	11,700	16,000	27,700
1952	6,000	4,700	10,700	800	600	11,400	12,000	7,400	16,100	23,500
1953	8,300	5,900	14,200	800	400	10,900	11,300	9,500	16,800	26,300
1954	7,800	6,200	14,000	1,100	700	18,600	19,300	9,500	24,900	34,400
1955	10,300	2,900	13,200	1,000	600	15,400	16,000	11,900	18,300	30,200
1956	8,400	4,500	12,900	900	500	13,300	13,800	9,800	17,800	27,600
1957[1]	9,200	2,800	12,000	900	600	14,800	15,400	9,300	18,000	28,300
Average:										
1947-56	9,000	4,600	13,600	900	700	12,500	13,200	10,600	17,100	27,700
1947-51	9,800	4,300	14,100	900	800	11,000	11,800	11,500	15,300	26,800
1952-56	8,100	4,900	13,000	900	600	13,900	14,500	9,600	18,800	28,400

[1] Preliminary.

Some of the olive orchards of Algarve, Portugal in December. Horsebeans and olives grow among fig trees (above, left). Ground prepared for planting annuals around the figs (above, right); tree in foreground shows typical drooping habit of figs. Young trees at left are almonds, planted between rows in old fig orchard.

caprification, the results are better with it, and it is generally practiced in Algarve.

The Cotio fig tends to be smaller than the Smyrna (Turkish) or Kalamata (Greek) figs. According to C. W. Bonner, California packer, the Algarve fig is thin-skinned and meaty, has a very small eye, resembles the Adriatic in size and color and the Calimyrna internally, and is relatively free of mold or endosepsis but subject to red spider mite infestation.

Yields

No reliable information is available on yields. According to Algarve packers, they range from 2 to 65 pounds of dried fruit per tree in Algarve. However, yields at the lower end of the range predominate.

On the basis of the Junta estimates of tree numbers--2.6 million--and average Algarve production--13,000 tons, the average yield would be 10 pounds per tree. The number of trees per acre--where they are solid-planted--is believed to range between 40 and 50. On this basis, yields would average between 400 and 500 pounds per acre--about one-fifth of California yields. Actually, the Algarve yield per acre is even less than this since much of the producing area carries less than 40 trees per acre. As few as a half-dozen fig trees per acre growing amidst other types of trees or field crops is a common sight.

Soils

The fig-growing districts of the Algarve are in the coastal plain. Average elevation is about

100 feet above sea level. The topography here is flat to gently rolling, with increasing elevation from the coastline to the base of the low mountain ridge which roughly parallels the southern coast. The coastal plain, which runs from east to west, ranges up to 14 miles in width.

The soils are mainly of a class known as red Mediterranean limestone, and to a lesser extent red Mediterranean sands. There are also pockets of alluvial soil about Portimao, Albufeira, and Faro--important fig-producing centers. The coastal plain soils are generally stone-free, heavy, and reasonably fertile. They are suitable for tree crops--as olives, figs, almonds, carob beans, and citrus--as well as grains, horsebeans, and truck crops.

As the land rises into the mountains, the soils become thin and stony and support mainly sagebrush, though some peasants manage to raise wheat and corn among the stones.

Climate

The climate in southern Portugal is somewhat similar to that of the fig-producing area of California. In both, the rainiest season is winter and the driest is summer. Also, average winter temperatures are above freezing. Cloudless skies and brilliant sun prevail most of the year.

However, total rainfall in the Portuguese fig-producing area is considerably greater, averaging 19.6 inches in comparison with 9.4 inches at Fresno, Calif. Also Portuguese summer temperatures are measurably cooler than Fresno's and the winters are somewhat warmer than at Fresno.

Seasonal weather averages are as follows in southern Portugal:

	Rainfall	Temperature
Spring	4.7 inches	61° F.
Summer	2.7 "	70° F.
Fall	4.0 "	67° F.
Winter	8.2 "	55° F.

Cultural Practices

The most striking characteristic of fig culture in Portugal is the smallness of the orchards and the interspersion of other types of trees among the figs. Just a handful of producers have large orchards devoted to figs.

Most Algarve farms are small, and have been further fragmented into scattered plots by inheritance customs. About 70 percent of the farms are less than 12.4 acres in size; nearly 60 percent are less than 7.4 acres. Over half consist of three or more separate parcels; almost 25 percent are divided into 6 or more pieces.

The resulting smallness of fields has an important effect on cultural practices. Orchards are too small to lend themselves to mechanical operations. There are no statistics on size of fig orchards, but most orchards appear to be not over an acre in area.

Cultivation is mainly by hand and horse- or donkey-drawn equipment. Spraying against insects or diseases is virtually nonexistent except on the farms of a few large growers. Some pruning is carried on to thin out dense wood and to shape trees, but a large proportion of the trees are not pruned at all and many have more than one trunk. The trees are not fertilized directly but derive some benefit from the fertilizer applied to the interplanted wheat, beans, or truck crops.

Also, the practice of interplanting fig orchards with olive, almond, and carob trees makes the efficient management of the fig trees very difficult.

As a result of the relatively heavy rainfall during the dormancy period of the trees, fig orchards are not irrigated.

Harvest usually commences the first week of August in Algarve and lasts about a month. A small amount of late-maturing fruit can still be found in early September. Occasionally, a hot, dry summer may cause the harvest to begin in late July.

Harvesting is accomplished by shaking the figs off the trees after they have become partly dry or by picking them up from the ground or off the trees. They are then brought to drying yards and spread in the sun. They are covered at night with mats.

UTILIZATION

Drying is by far the main commercial use of the fig crop. Only about 10 percent of the crop is marketed as fresh fruit. Three to four pounds of unshrunken fresh figs are required in Portugal for one pound of dried figs.

As earlier stated, on the average approximately two-thirds of the Algarve crop is of edible quality while one-third is fit only for industrial use. There is considerable variation between years in the proportion of the crop that is substandard. In 1950, for example, only 12 percent of the crop was substandard while in 1952 and 1954, 44 percent was below edible standards:

	Percent		Percent
1947	37	1952	44
1948	42	1953	42
1949	30	1954	44
1950	12	1955	22
1951	34	1956	35

It appears that the proportion of substandard figs has increased in more recent years; it is not clear whether this increase was due to less favorable growing and handling conditions or to the application of higher standards.

Domestic Consumption

Domestic disappearance of edible dried figs has fluctuated greatly in the years since World War II, ranging from a high of 8,700 tons in 1947 to as little as 2,700 tons in 1955 and 1956. The trend has been toward decreased use within Portugal. This is partly the result of smaller production, but much more the result of sharply increased exports of edible figs, and particularly of paste. Consumption figures, like those for production, are unofficial estimates and may not be entirely accurate.

Exports

Exports of edible figs (exclusive of paste) increased from an average of 1,900 tons in the early postwar years to 3,100 tons in 1952-56, when they amounted to 38 percent of Algarve's edible production.

Paste exports were negligible until the 1954-55 crop season. That season, they were 300 tons, but the next year they jumped to 4,200 tons and then slipped back, to 2,200 tons in 1956-57. The 1957-58 export movement is tentatively estimated at 2,300 tons. These paste export figures cover shipments to all countries, though the United States has been by far the main destination. Paste exports accounted for 40 percent of the Algarve's edible production in 1955-56, and 26 percent in 1956-57.

Exports of industrial-grade dried figs, like those of paste, were practically nonexistent until 1954-55. In the three seasons, 1954-55 through 1956-57, they averaged 1,100 tons, or 9 percent of the total crop.

Exports of edible figs, fig paste, and industrial figs, combined, accounted for 38 to 72 percent of Algarve's production in the three seasons, 1954-55 through 1956-57. This is a remarkable increase over the proportion exported in earlier years--only 13 percent between 1947 and 1951.

Fig paste on docks at Portimao.

The sharp increase in Portuguese exports coincided with successively smaller Turkish-Greek dried fig crops in 1954-55 and 1955-56. Turkish-Greek production fell 2,000 tons in 1954-55 and a further 4,000 tons in 1955-56, and their exports declined even more sharply in each of these years as Portuguese exports increased. The movement of Portuguese dried figs or paste into traditional Greek-Turkish outlets was particularly striking in the United States in the 1955-56 season when United States imports of Turkish fig paste decreased 3,000 tons while imports of Portuguese paste increased 3,100 tons.

Portuguese whole dried figs move into export earlier in the season than paste. They are shipped early enough to be in retail channels in the importing countries before Christmas. Since fig paste is used by the baking industries, imports may be made over a longer period during the crop season. Also, the paste is produced only after the choicest fruit has been selected for packaging.

The 2 peak months of Portuguese exports of dried edible figs in recent seasons, in order of magnitude, have been:

1954-55...... October, September
1955-56...... September, October
1956-57...... October, September
1957-58...... October, September

The 2 peak months of paste exports have been:

1954-55...... April, February
1955-56...... June, May
1956-57...... November, October
1957-58...... December, January

There is considerable variation in the time of peak exports of paste. Movement of paste is more sensitive to fluctuations in the availability and prices of competing countries' paste than is the movement of dried figs.

Western Europe is Portugal's main foreign market for dried edible figs. Before World War II, four-fifths of Portugal's exports moved into that area. The proportion dropped to two-thirds in 1955 and 1956, but the actual quantities shipped were larger than before the war.

Over the years, Belgium has been the most consistent single buyer of Portuguese dried edible figs, taking over 600 tons annually on the average. The Netherlands, which was the largest customer before the war, bought practically no Portuguese figs for several years after the war. However, in 1953, the Dutch reappeared as a major buyer and have since ranked second or first.

The most striking development in Portugal's exportation of figs has been the emergence of the United States as the largest outlet for dried edible figs as well as for paste. Beginning with 1950, when 530 tons were exported to the United States, about one-fourth of Portuguese dried fig exports have been shipped to the United States, averaging 742 tons annually in the years 1953 through 1956.

The United Kingdom has also developed into an important Portuguese outlet. Brazil, on the other hand, was once a leading buyer of Portuguese figs but has cut its purchases considerably. Of the other European countries, Western Germany and Switzerland are the main customers and of increasing importance.

TABLE 3.--Disposition of the Algarve crop of dried figs, 1946-56

Marketing year beginning September 1	Domestic consumption			Exports[1]				Total crop
	Edible	Industrial	Total	Edible whole	Paste	Industrial	Total	
	Short tons	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*
Annual:								
1946...........	--	--	--	1,800	--	--	1,800	--
1947...........	8,700	5,900	14,600	1,200	--	--	1,200	15,800
% of crop....	55	37	92	8	--	--	8	100
1948...........	6,200	5,200	11,400	1,000	--	--	1,000	12,400
% of crop....	50	42	92	8	--	--	8	100
1949...........	6,300	3,300	9,600	1,400	--	--	1,400	11,000
% of crop....	57	30	87	13	--	--	13	100
1950...........	8,500	4,500	13,000	3,200	--	--	3,200	16,200
% of crop....	52	28	80	20	--	--	20	100
1951...........	7,200	5,000	12,200	2,700	--	--	2,700	14,900
% of crop....	48	34	82	18	--	--	18	100
1952...........	4,500	4,700	9,200	1,500	--	--	1,500	10,700
% of crop....	42	44	86	14	--	--	14	100
1953...........	5,400	5,900	11,300	2,900	--	--	2,900	14,200
% of crop....	38	42	80	20	--	--	20	100
1954...........	3,500	5,200	8,700	4,000	300	1,000	5,300	14,000
% of crop....	25	37	62	29	2	7	38	100
1955...........	2,700	1,100	3,800	3,500	4,200	1,800	9,500	13,300
% of crop....	20	8	28	26	32	14	72	100
1956...........	2,700	4,000	6,700	3,400	2,200	600	6,200	12,900
% of crop....	21	31	52	26	17	5	48	100
Average:								
1947-56........	5,600	4,500	10,100	2,500	--	--	3,500	13,600
% of crop....	41	33	74	18	--	--	26	100
1947-51........	7,400	4,800	12,200	1,900	--	--	1,900	14,100
% of crop....	53	34	87	13	--	--	13	100
1952-56........	3,800	4,200	8,000	3,100	--	--	5,100	13,000
% of crop....	29	32	61	24	--	--	39	100

[1] Boletim Mensal do Instituto Nacional de Estatistica until 1954, thereafter National Fruit Board figures, which are based on export licenses granted.

Note: Exports of paste and industrial figs are not shown when quantities were negligible.

The United States is far and away the main outlet for Portuguese fig paste. The volume moving to other destinations has also been increasing. In 1956, over 500 tons were exported to all countries excluding the United States. Canada was the main non-United States market, followed by Ireland and the United Kingdom.

Preliminary information indicates in 1957-58 the United States was again the leading market for Portuguese paste, taking about 2,000 tons. Roughly 300 tons went to other countries.

Portuguese export data will rarely coincide with United States import statistics.

First, there is a time lag between exportation and importation. Thus, figs exported in a specified month may arrive in the importing country the next month. This will affect annual as well as monthly comparisons.

Secondly, some exports destined for United States may be rerouted and end up in another country, though reported as an export to the United States. In the same way, exports designated for other countries may end up in United States.

Thirdly, since figs are subject to insect infestation and other contamination, exports may be rejected by the United States Food and Drug Administration and, therefore, not qualify as imports.

TABLE 4.--Exports of dried figs, by country of destination, averages 1934-38, 1947-49, 1950-52, annual 1953-56[1]

Country of destination	Averages 1934-38	1947-49	1950-52	1953	1954	1955	1956
	Short tons	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*
United States	48	5	623	849	628	834	658
Canada	15	34	167	102	41	35	59
Belgium[2]	447	677	626	637	627	751	557
Netherlands	676	10	75	368	691	801	634
United Kingdom	5	--	360	291	280	425	527
Other European countries[3]	195	8	66	26	174	220	274
Brazil	198	514	395	92	586	46	48
Other countries	68	81	112	112	132	170	173
Total	1,652	1,329	2,424	2,477	3,159	3,282	2,930

[1] Year beginning January 1.

[2] Includes Luxembourg.

[3] Countries outside of Soviet Bloc, except for prewar Germany.

Commercio Externo, Instituto Nacional De Estatistica.

TABLE 5.--Exports of fig paste, by country of destination, averages 1934-38, 1947-49, 1950-52, annual 1953-56[1]

Country of destination	Averages 1934-38	1947-49	1950-52	1953	1954	1955	1956
	Short tons	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*
United States	--	--	--	6	146	968	4,218
Canada	--	--	--	6	16	--	272
Ireland	--	13	--	5	--	--	144
United Kingdom	--	--	--	--	3	93	87
Other countries	--	--	--	--	--	3	5
Total	--	13	--	17	165	1,064	4,726

[1] Year beginning January 1.

Commercio Externo, Instituto Nacional De Estatistica.

The main port for export shipments is Portimao on the south coast of Algarve. The American Export Line stops there twice monthly enroute to the United States. Goods at Portimao are moved by lighters to shipside. The containers of figs are delivered to the docks shortly before ship arrival, and are stacked in the open but covered with canvas until loaded into the lighters

Exports are also made from Lisbon, and dried figs destined for European or other Portuguese ports are shipped from Faro and Vila Real, on the south coast.

PROCESSING

Location of Packinghouses

All of the Algarve production--of dried figs and paste--is processed within the Province. The authors visited five packinghouses in Algarve which produce all of the paste made in Portugal. These plants also pack most of the dried figs.

One plant is located in Albufeira--roughly halfway between Portimao and Faro, and a short distance inland from the sea; another is in the seaport town of Faro; a third is in the seaport town of Portimao; and a fourth near Portimao; the fifth is in the inland town of Loule, a short distance northwest of Faro.

Processing Methods

A typical processing operation is as follows:

1. The farmers' dried figs are placed in the packinghouses' silos, where they are fumigated, and the silos are sealed. In one plant, the silos have a capacity of 200 tons each. In this plant, the figs are fumigated again when taken out of storage. Fumigation is by carbon disulfide or methyl bromide.

2. The figs are handcarried from the storage chambers to the processing plant in boxes or baskets.

3. They are dumped into a washer-shaker, which cleans the fruit.

4. The fruit is handcarried or moved automatically into a dryer. Both steam and hot-air dryers were observed. They are generally fueled by oil. Drying temperatures range between 105° and 140° F., depending upon moisture content of the fruit. The maximum moisture content permitted by the National Fruit Board is 22 percent. Usually moisture is only 18 percent or less. In 1956-57, however, figs were moist and neared the maximum tolerance.

5. The figs are then graded and sorted. In some plants, grading and sorting takes place before washing and drying. In one plant, the second fumigation takes place after grading and sorting rather than after removal from storage.

Women, seated at marble-topped tables, do the grading and sorting. No moving belts are used. All the figs are carried to and fro in baskets or wooden boxes.

Culling is practiced to remove fermented, discolored, insect-infested, or damaged, dirty, bruised, and undersized fruit.

The passable fruit is graded into three sizes: Large, medium, and small.

6. Only the two smaller sizes--Meia Flor and Mercador--are ground into paste. They are dumped by hand into grinders, which have a capacity of one-half to 1 ton per hour. The number of grinders installed varied from one to four per plant. The machines are generally of German manufacture.

Figs that will be ground into paste in the United States are clipped at both ends. The largest size is also used for this purpose.

In the case of fig paste for the British market, the stems are first removed from the figs by hand, and after the figs have been ground into paste, the seeds in the paste are crushed by steel rollers.

7. The paste coming out of the grinders is squeezed--by hand--into 80-pound cartons lined with wax paper. The cartons are weighed and sealed by hand. Hand screw presses are also used. One firm hopes to substitute polyethylene liners for the wax paper.

8. In a couple of plants, the second fumigation takes place after the paste has been packed and sealed in the cartons.

9. Samples of the paste are inspected by the National Fruit Board, and lots passing inspection for export are so stamped by the Board.

Packaging and Grading

Whole, edible dried figs are packed in a variety of bulk containers and consumer packages. Wooden boxes--for the European and internal market--containing 4.4, 8.8, 22, 25, and 30 pounds are used. Cellophane packages of 1/3, 1/2, and 1 pound are the common consumer sizes. Some figs are also put up on a string--in Greek fashion--weighing 1 pound, in a cellophane wrap.

IN PORTUGUESE PROCESSING PLANT, figs are moved from fumigation chambers into processing.

Workers feed figs into elevators leading to shaker-washers.

Fig paste is packed into 80-pound cartons.

Figs are packed in boxes here, but other containers are used too.

Clipped figs, to be ground into paste in the importing country, are packed in lined burlap bags holding 30 or 67 pounds. Industrial-grade figs are exported in burlap bags holding 165 pounds.

Whole edible figs are shipped under the three-size grades:

	Dried figs per 500 grams
Flor	Less than 39
Meia Flor	39 to 52
Mercador	53 to 70

TABLE 6.--Size grade-out of dried edible figs by packinghouses, averages 1946-55, annual 1951-55

Year	Flor (less than 39 per 500 grams)	Meia Flor (39-52 per 500 grams)	Mercador (53-70 per 500 grams)
	Percent	*Percent*	*Percent*
Average:			
1946-50	6.5	42.4	51.1
1951-55	7.4	50.4	42.2
Annual:			
1951	6.0	47.0	47.0
1952	6.0	44.0	50.0
1953	7.0	49.0	44.0
1954	7.0	55.0	38.0
1955	11.0	57.0	32.0

The proportion grading Mercador--the smallest size--has declined in recent years, probably because the proportion graded industrial, i. e. substandard, has increased (table 2). The opening of export markets for industrial-quality dried figs (which are used largely for coffee substitutes) has provided exporters an additional outlet for small low-grade figs. It is probably this development, rather than an improvement in the size of the fruit, that has resulted in less fruit falling into the Mercador class.

Labor

The labor is predominantly female. Only a few men are employed, and they are foremen or mechanics. The largest plant employs about 400 persons; employment in the others ranges between 50 and 150 workers.

Wages[2] for female labor in 1957 were 41 cents per day, for an 8-hour day. During the busy season, a 10- or 11-hour day is worked, with the pay for extra hours calculated at "straight time." During the peak season, two shifts are employed. Male labor was paid 86 cents for an 8-hour day. Top pay--for foremen or technicians--is $1.73.

One processor estimated the cost of labor to pack a pound of fig paste as 0.3 cents per pound and 0.8 cents for packing a pound of clipped figs.

Physical Plant

The packinghouses visited varied considerably in physical layout. Only in one plant did all of the processing operations take place within one large room, with the fruit moving, unencumbered, from one operation to the next. At the other extreme was a plant consisting of several rooms, with the figs being hand-carried from room to room for successive operations.

Buildings vary from large, roomy, solidly constructed, well-lighted structures to those deficient in all of these merits. The walls up to 5 feet are generally of glazed tile as are floors. Construction is of stone, faced with cement; buildings are completely ceilinged. There was also considerable variation in the cleanliness and sanitary aspects among plants. Some were very clean; others were not. Some of the plants have laboratories in which insect head counts and other purity checks are regularly made.

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[2] Fringe benefits, which are believed to be minor, are not included in the wages shown.

Only one plant had elevators, moving belts, and chutes in evidence. Even here there was much carrying of fruit by hand. No hand trucks or carts are used in moving fruit. However, some modernization and expansion were taking place in practically all of the plants. New warehousing and fumigation facilities are being planned and constructed. New equipment--washers, dryers, grinders, boilers--was being installed. The packers seem to have a definite interest in improving their facilities.

PRICES

Portuguese dried figs entering the United States have been consistently and substantially cheaper than dried figs imported from other foreign countries. The main reason is that Portuguese figs have been predominantly bulk-pack paste stock, whereas the other foreign figs are mainly packaged fruit for the retail trade.

TABLE 7.--Declared foreign value[1] of Portuguese, Greek, Turkish, and Italian dried figs, 1950-57

Year beginning August 1	Portugal	Greece	Turkey	Italy
	Cents per lb.	*Cents per lb.*	*Cents per lb.*	*Cents per lb.*
1950	9.4	11.8	22.0	14.8
1951	10.3	13.3	17.5	14.6
1952	13.3	13.6	24.2	17.1
1953	9.0	11.3	21.4	15.8
1954	9.1	10.8	20.0	15.7
1955	9.0	10.6	22.5	14.9
1956	9.2	11.5	23.2	15.3
1957	--	--	--	--

[1] For Portugal and Greece, these are probably c.i.f. New York prices.

U.S. Tariff Commission compilation of official statistics from the U. S. Department of Commerce.

Portuguese prices, however, have tended to be stable--in the vicinity of 9 cents per pound--for the most recent four seasons shown.

F.o.b. Fresno prices[3] for retail-pack of California dried figs were as follows in recent seasons:

	1953-54	1954-55	1955-56
	Cents per pound	*Cents per pound*	*Cents per pound*
Calimyrnas	29.6	29.3	31.3
Black Missions	14.5	15.6	17.7

It should be noted that the import prices shown in table 7 are more useful for general indications than as specific market prices. They are actually the weighted averages of a variety of packs. The Portuguese fig imports, for instance, consist of some retail packs of different weights and some figs on string, but are mainly bulk-packed clipped figs to be ground into paste. Thus, there may be a considerable range at a given moment in the price per pound of Portuguese (or other) imports depending upon the type of pack and quality.

Further, although import prices are to be reported to U. S. Customs on an f.o.b. foreign port basis, it seems that many shipments are inadvertently quoted on a c.i.f. basis. The import prices, therefore, consist of varying proportions of f.o.b. and c.i.f. prices. The difference between f.o.b. and c.i.f. prices is roughly 1 1/4 cents per pound.

Also the tariff of 4.5 cents per pound has to be added to the import price in order to make comparisons with prices of domestic figs. And, in comparing these import prices with the California prices shown, 2 1/4 cents per pound for freight must be added to the latter, when comparisons are on an East Coast basis.

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[3] From U. S. Tariff Commission compilation from information submitted to the Commission by individual firms.

TABLE 8.--Cost elements making up f.o.b., c.i.f., and landed duty-paid prices for recent seasons of Portuguese dried edible figs, bulk pack[1]

Item	Cents per pound
Cost of fruit (med. size), Algarve	4.7
Cost of packing, Algarve	1.5
F.o.b. price, Algarve	6.2
Ocean freight to New York	1.0
Insurance	.25
Brokerage (5%)	.37
C.i.f. price, N. Y.	7.82
Drayage from pier	.20
Tariff duty	4.5
Price ex-dock, N. Y.	12.52

[1] To be ground into paste after importation.

Portuguese fig paste prices have also been well below other foreign and domestic paste prices. Even after payment of the tariff duty, they have been substantially lower than prices of the leading California paste varieties--Calimyrna and Adriatic--on the East Coast. The price spread is narrower, because of freight differentials, when comparisons are made in cities that are further west. In Chicago, for instance, where considerable quantities of paste are utilized, the spread is about 1.65 cents per pound less than indicated in table 9. The freight charge for shipping California paste to Chicago is about 0.75 cents per pound less than to New York; 0.9 cents per pound has to be added to the cost of Portuguese paste to cover freight from New York to Chicago.

TABLE 9.--Fig paste prices: Comparison of New York prices of U. S. and foreign paste, 1954-56

Marketing year beginning August 1	Portuguese	Turkish	California[1]		
			Calimyrna	Adriatic	Black Mission
	Cents per pound	*Cents per pound*	*Cents per pound*	*Cents per pound*	*Cents per pound*
1954:					
C.i.f. New York	7.7	9.1	--	--	--
Tariff duty	5.0	5.0	--	--	--
Drayage from pier	.2	.2	--	--	--
Landed duty-paid price, N. Y.	12.9	14.3	16.2	15.2	12.1
1955:					
C.i.f. New York	7.3	9.9	--	--	--
Tariff duty	5.0	5.0	--	--	--
Drayage from pier	.2	.2	--	--	--
Landed duty-paid price, N. Y.	12.5	15.1	18.6	15.3	13.8
1956:					
C.i.f. New York	7.7	10.0	--	--	--
Tariff duty	5.0	5.0	--	--	--
Drayage from pier	.2	.2	--	--	--
Landed duty-paid price, N. Y.	12.9	15.2	17.6	14.2	11.6

[1] Estimated New York price: f.o.b. Fresno price as compiled by U.S. Tarrif Commission plus 2.25 cents per pound for freight, Fresno to New York.

U. S. Tariff Commission which has compiled the c.i.f. prices for foreign figs from official statistics of the U.S. Department of Commerce and the California fig prices from information submitted to the Commission by individual packing firms.

The import prices of Turkish paste, in seasons prior to the entrance of Portuguese in the United States market, were considerably higher--13.4 cents in 1951-52 and 11.0 cents in 1952-53.[4]

Portugal sends its highest quality packaged figs to the United States. The other qualities are sold on the European and internal market. The price of dried edible figs for the European market is usually about 1.5 cents per pound lower than for shipments to the United States. Packers require a premium for shipments to the United States not only because of the higher specifications but also because of the risks of rejection.

Ocean freight to the United States costs about 1 cent per pound and to the United Kingdom about 1/4 cent less, and brokerage 5 percent.

Inedible figs from the Algarve are sold by the packers to the alcohol distillers at Torres Novas, where the large production of inedible Torres Novas dried figs is made into alcohol. The government sets a fixed price--2.6 cents per pound in 1956-57 and 1957-58 for inedible Algarve figs. The distillers are obliged to accept such figs at the fixed price. This alcohol is sold at 34.5 cents per liter retail.

Retail prices for dried figs within Portugal the past few seasons have been reported as 11 to 11.5 cents per pound for the largest size (Flor), about 9 cents for the medium size (Meia Flor), and 6 3/4 - 7 1/4 cents for the smallest size (Mercador).

Prices received by Portuguese growers have been fairly stable. In recent years, packers have paid 4.7 cents per pound for the smallest and medium sizes. For the largest size group, packers paid producers between 5 3/4 and 7 3/4 cents per pound in 1957-58. In earlier seasons the price range for Flor was from 5 to 7 3/4 cents per pound.

Only in the case of the few large growers are the prices paid by the packinghouse subject to negotiations prior to delivery.

GOVERNMENTAL POLICY

Portugal is a so-called corporate state and the major branches of agriculture are corporatively organized. Each branch is directed by a semigovernment agency known as an organism of economic coordination. There are, for example, such organisms as the National Bread Institute, the Commission for Regulating Commerce of Rice, the National Olive Oil Board, the National Board of Animal Products, and the National Fruit Board. The fig industry is under the Fruit Board.

National Fruit Board

In the fruit field, this organism is broadly responsible for developing and coordinating national production and trade, with a view to expanding Portuguese exports.

Some of the specific functions of the Board are:

1. To observe market conditions in the fruit trade and to recommend to the government legal measures which would lead to improvements.

2. To orient, discipline, and collect levies on the fruit trade as well as to insure that the trade complies with all legal requirements.

3. To promote and organize the expansion of the fruit market, both at home and abroad, using whatever advertising that is appropriate.

4. To maintain the good name and reputation of Portuguese fruit and vegetable products.

5. To supply the Ministry of Economy with timely information so that government agencies will be able to meet the requirements of the domestic and export market.

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[4] Detailed analyses of import competition within the United States were made by the U. S. Tariff Commission in its December 1956 and September 1957 Reports to the President, "Dried Figs and Fig Paste."

6. To issue certificates of quality and origin and to authorize the use of registered trademarks.

As indicated earlier the Board is responsible for the inspection of fig paste for export.

Gremio of Fruit and Vegetable Exporters of the Algarve

The Gremio, a subordinate corporative organ of the Board, was created in 1933. It is located in Faro. The Gremio operates exclusively for the national interests, is forbidden to affiliate with any international organization except by permission of the government, and must subordinate its own interests to that of the nation.

All entities which export fruits and vegetables from the Algarve are obliged to belong to it. These may be individuals, firms, or cooperatives. They are designated as members and only members may use "Marca Nacional," "Frutos Portuguese de Exportacao," or "Algarve."

The costs of becoming a member of the Gremio, dues, and examples of assessments on exports paid to the Gremio are as follows:

	Internal market	Export market	Total
Membership fee	$3.45	$6.91	$10.36
Monthly dues	.52	1.04	1.56

	Export assessments (per pound) by--		
	Gremio	Board	Total
Figs, dried or paste	$.00016	$.00031	$.00047
Almonds, shelled	.0016	.0047	.0063
Almonds, in-shell	.0008	.0019	.0027

An important function of the Gremio is the setting of minimum export prices. These are determined by vote at Gremio meetings, and no member is permitted to export at less than the minimum prices. Exporters must submit documents each month to the Gremio showing the volume, value, and destination of all produce sold during the preceding month.

The Gremio is directed by three members--president, treasurer, and secretary. In addition, a government delegate from the National Fruit Board is an integral part of the Gremio management and can veto any action which he feels prejudicial to the best interests of the nation. Members of the Gremio are entitled to numbers of votes in proportion to their volume of exports in the preceding year.

Infractions of the Gremio regulations are punishable by fines, suspension of exporting privileges, or both.

Extension Services

There is little evidence of an awareness among Algarve fig growers of improved methods, partly because extension services are very limited, but mainly because of the illiteracy of the population. Although literacy in the Algarve is greater than the average for Portugal, only 53 percent were able to sign their name, according to a 1950 survey.

The Portuguese extension service, whose field branches are known as the Posto Agrario, is under the supervision of the Agricultural Services Division of the Ministry of Economy. In Algarve, the Posto is headquartered at Tavira, a small city about 30 miles east of Faro. An agricultural engineer is in charge, assisted by a staff of eight technicians and specialists. This group covers the entire Algarve Province, which contains about 38,000 farms. Only in recent years has Portugal become interested in developing an effective extension service. The Postò carries out both educational and experimental functions. Some of these are:

(1) Counsels farmers on fertilizer use, identifies insects and plant diseases, and recommends methods of control, and advises farmers as to the types and varieties of fruit trees to plant.

(2) Advises farmers how to properly organize farms, i.e., what to plant and where.

(3) Gives annual courses on the pruning of fruit trees and maintains a list of persons licensed and qualified to prune.

(4) Carries out soil tests.

(5) Advises on the proper layout of orchards.

(6) Makes experimental plantings of fruit trees to determine the most appropriate varieties for the soils and climate of the Algarve.

(7) Furnishes recommended nursery stock and insecticides to growers.

Any farmer has access to the Posto services, either by a personal visit, by mail, or by requesting that a technician come to his farm. In view of the recency of its development, however, few farmers are probably aware of this service.

Outlook

It is doubtful that Portuguese exports will exceed or even maintain the high level attained in the 1954-55 through 1957-58 seasons. There are no indications that production will increase; in fact the slow decline of recent years will probably continue. Nor is it likely that domestic consumption can be further contracted to increase export availabilities. Also, the substantial proportion of the crop which is of substandard quality will probably not decrease materially--there are no signs of improving cultural methods or shifting to superior varieties. Portuguese exports have benefited in recent seasons from shortfalls in Turkish-Greek production or quality. Production in these countries, however, has been trending slowly upward and Portugal may have difficulty maintaining its recent level of exports when both Turkey and Greece "come in" with a large crop of good quality.

The unequaled high volume of paste exports achieved in 1955-56 may be regarded as unusual--resulting from a drop in Turkish shipments to the United States[5] and the availability, for the first time in large volume, of Portuguese fig paste at exceptionally low prices. However, heavy rejections at United States ports by the Food and Drug Administration--because of failure to meet minimum standards--have made Portuguese exporters more cautious, particularly because it has since become impossible for them to obtain insurance against rejections.

Furthermore, the Portuguese Government, in August 1956, put into effect regulations governing the preparation and exportation of fig paste (see Appendix). These regulations set up minimum standards for the fruit going into paste, for the paste itself, for packinghouse installations, and for the packaging of the paste. The National Fruit Board is authorized to enforce the various regulations and to inspect the paste. Paste which does not pass inspection may not be exported.

Only one full season and part of another had elapsed--at the time of this writing--since the above regulations went into effect. It is, therefore, still too early to judge how effectively they are being enforced.

In any case, packinghouses seem to be making an effort to comply with the regulations. This in itself could result in some increase in price and decrease in paste shipments to the United States compared with the last few seasons. Installation within plants of improved facilities undoubtedly requires additional investment and raises overhead costs; and closer culling of the fruit handled by processors both raises the cost of packing and reduces the volume usable for export to the United States

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[5] American importers limited their purchases from Turkey in 1955-56 for two reasons: (1) The Turkish Government early in the season applied an export subsidy to dried figs and fig paste. Since such imports would have been vulnerable to a U. S. countervailing duty, importers held off making purchases until the Turkish Government exempted shipments to the United States from subsidization. (2) The importers further delayed buying paste from Turkey while awaiting the outcome of an antidumping investigation by the U. S. Treasury. The Treasury subsequently found that dumping was not taking place.

APPENDIX

Regulations Governing the Preparation and Exportation of Fig Paste

Decree No. 40,723 providing "Regulations Governing the Preparation and Exportation of Fig Paste," was published in the Diario do Governo, Series I, No. 163, August 2, 1956.

Article 1. The preparation and exportation of fig paste are controlled by this decree.

Article 2. Fig paste may only be exported by individuals and firms registered with the guilds of exporters of fruit and horticultural products.

Article 3. Fig paste, shall be the product resulting from the mechanical grinding of dried figs.

Article 4. In preparing fig paste, the following types of fig may not be used:

a. Unfumigated and unwashed figs;

b. Fermented figs or those containing mold or live insects;

c. White, or insufficiently dehydrated figs in a percentage exceeding 3 percent;

d. Figs containing impurities in a percentage exceeding one percent.

Article 5. The fig paste shall possess the following characteristics:

a. Be light and uniform in color, free from black particles, insects, dirt or other impurities;

b. Of homogenous texture, free from particles exceeding 5 cm. in diameter;

c. Possess the characteristic odor of dried and wholesome fruit, free from fermentation and mold;

d. Moisture content may not exceed 22 percent.

Article 6. Upon proper application from a manufacturer, the National Fruit Board may authorize the addition of extracts, vegetable juices or flavors, or other products to the fig paste for the purpose of improving the flavor, appearance, or preservation, providing the added substances are not harmful to health.

Whenever any substance is added to the paste, this fact should be stated on the labels or containers in which the paste is packed.

Article 7. Fig paste may be prepared in appropriate installations, duly authorized by the National Fruit Board, which shall conform to the following minimum requirements:

a. Floors must be smooth and even and easily cleaned;

b. Walls shall be white-washed and paneled with vitrified ceramic tile or marble to the height of at least 1.5 meters;

c. There shall be potable water installations and, so far as possible, the water shall flow through pipes;

d. Tables and utensils must lend themselves to easy washing and sterilizing and table tops must be of polished stone or other similar material;

e. Exterior doors and windows must be covered with wire screening not exceeding 1mm.

f. There must be sanitary facilities for personnel.

Article 8. Industrial figs, or figs not fit for human consumption, may not be stored near the installations used for the preparation of fig paste.

Article 9. Containers and packages for fig paste must be of the following types:

a. Cardboard boxes affording the necessary strength during transportation, lined on the inside with waxed or other similar paper which may adequately protect the product from humidity;

b. Tinplate cases;

c. Packets made from waxed paper, cellophane or other material of similar quality, packed in wooden or cardboard boxes, affording necessary protection during transportation;

d. Other special containers which the importing markets may prefer and which may be authorized by the National Fruit Board.

Article 10. All containers and packages must bear in addition to the national brand marks and, when applicable, the countermark "Algarve," the designation of the product, its net weight by volume, and the name or brand of the exporter or the manufacturer.

Article 11. It shall be the duty of the National Fruit Board to see to it that the precepts and rules contained in this regulation are fulfilled and to examine the fig paste intended for exportation in accordance with the provision of Decrees no. 25223 and no. 25874 and the present act.

Article 12. Authorization will not be granted for the exportation of fig paste which does not conform with the characteristics referred to in Article 5 of this decree.

Article 13. The customs authorities shall not issue fig paste clearance certificates for exports, coastal trade between coastal ports, or for ships' supplies, unless the interested parties produce verification certificate issued by the National Fruit Board.

Article 14. Exporters of fig paste shall pay the following taxes:

a. $.02 escudo (2 centavos) per kilogram, net weight, on the product submitted for verification to the National Fruit Board;

b. $.01 escudo (1 centavo) per kilogram, net weight, on the exported product to the Guild of Fruit Exporters with which they may be registered.